Classification of amino acids

Class of amino acids	Names	Abbreviation	Sours A.A	Side chain	Kind	Importance and properties	figure
A) Amino acids with aliphatic side chain	1-glycine	Gly or G	Glycogenic	Non-polar	Non-essential	1-smallest amino acids 2-Has a role in biosynthesis of many compounds (such as purines , heme ,and creatine) 3-Has sweet taste.	
	2-Alanine	Ala or A	Glycogenic	Non-polar	Non-essential	1-Has a Role in nitrogen transport from tissues to the liver.	
	3-valine	Val or V	Glycogenic	- branched - non-polar	Essential	1- The name comes from valeric acid derivative of plant.	
	4- Leucine	Leu or L	Ketoginic	- branched - non-polar	Essential	1- The name comes from the Greek word *leukos* (white), and leucine forms white crystals.	
	5-Isoleucine	Ile or I	Glycogenic Ketogenic	- branched - non-polar	Essential	1- Isomer of leucine	
B) Amino acids with side chain containing hydroxylic group	1- Serine	Ser or S	Glycogenic	polar	Non-essential	1- Helps in glycoprotein formation 2- Found at the active site of enzymes. 3- is common in silk protein.	
	2-Threonine	Thr or T	Glycogenic Ketogenic	polar	Essential	1- Found at the active site of enzymes. 2- it is similar to the four-carbon sugar threose 3- Helps in glycoprotein formation.	
	3- tyrosime	Tyr or T	Glycogenic Ketogenic	Non-polar	Non-essential	1- it is found in cheese 2- Precurssor of some hormones like thyroid hormones and catecholamine 3- precursor to the pigment melanin	
C) Amino acids with side chain containing sulfur atoms	1-Cysteine	Cys Or C	Glycogenic	polar	Non-essential	1- Found at the active site of enzymes 2- it is discovered in bladder stones, 3-Precursor of the antioxidant glutathione.	
	2-Methionine	Met or M	Glycogenic	Non-polar	Essential	1-Acts as S-adenosyl-L-methionine, a methyl donor in many bioreactions 2- It is called methionine because the side chain contains sulfur atom with a methyl group	

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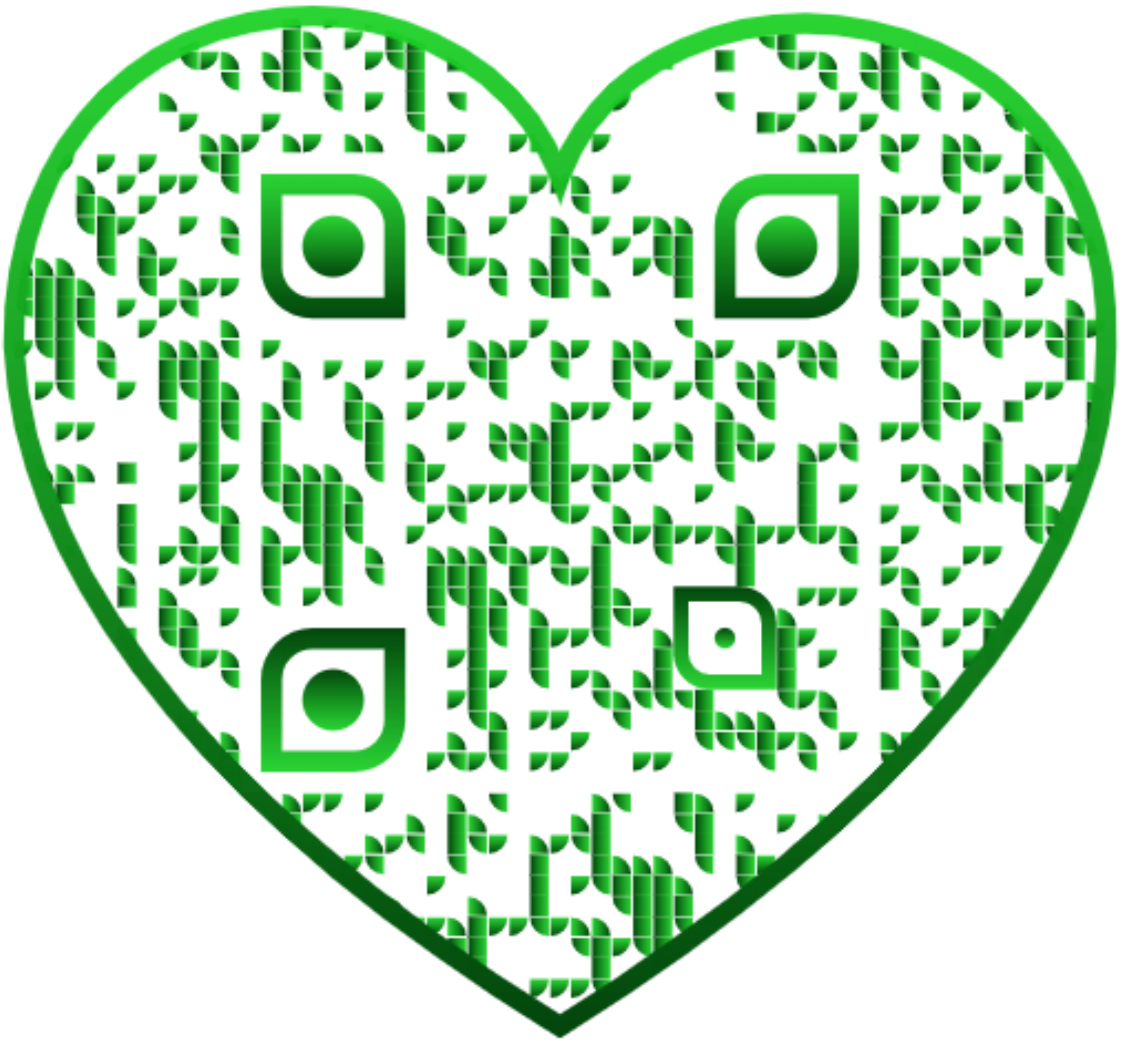

Classification of amino acids

D-Amino acids with side chain containing acidic groups or their amides	1-Aspartic acids	Asp or D	Glycogenic	polar	Non-essential	from asparagus. 1-It is called aspartic because it is isolated 2- Input to urea cycle Found at the active site of enzymes	
	2-Asparagine	Asn or N	Glycogenic	polar	Non-essential	1-It is called asparagine because it is isolated from asparagus. 2- Aids in formation of glycoproteins	
	3-Glutamic acid	Glu or E	Glycogenic	polar	Non-essential	1-It is called glutamic acid because it is first identified in the plant protein gluten. 2- Has a central role as nitrogen donor in synthesis of nonessential amino acids 3- acts as a neurotransmeters 4- Transport of nitrogen to the liver	
	4-Glutamine	Gln or Q	Glycogenic	polar	Non-essential	1-It is called glutamine because it is first identified in the plant protein gluten. 2- Has a central role as nitrogen donor in synthesi of nonessential amino acids 3- Transport of nitrogen to the liver	
F-Amino acids with side chain containing basic groups	1-Arginine	Arg or R	Glycogenic	polar	essential	1-It is called arginine because it is crystallizes as a silver salt, from Latin *argentums* (silver). 2- Precursor for the synthesis of nitric oxide (No	
	2- Lysine	Lys or K	Ketogenic	polar	essential	1-It is called lysine because it is produced during protein hydrolysi 2- Produce carnitine which is important for lipid oxidation	
	3-Histidine	His or H	Glycogenic	polar	essential	1-It is called Histidine because it is first isolated from sturgeon sperm, named for the Greek *histidin* (tissue). 2- found at the active site of enzymes 3- Important in the structure of hemoglobin 4- Source of histamine	
G-Amino acids with side chain containing aromatic ring	1_Phenylalanine	Phe or F	Glycogenic Ketogenic	Non-polar	essential	1-It is called phenylalanine because it is consist of alanine with a phenyl group	
	2-Tryptophan	Trp or W	Glycogenic	Non-polar	essential	1-it is isolated from a tryptic digest of protein 2-Precursor for serotonin , melatonin and niacin	
H-Imino acid	1-proline	Pro or P	Glycogenic	Non-polar	Non-essential	It called proline because it form a pyrroldine ring.	

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